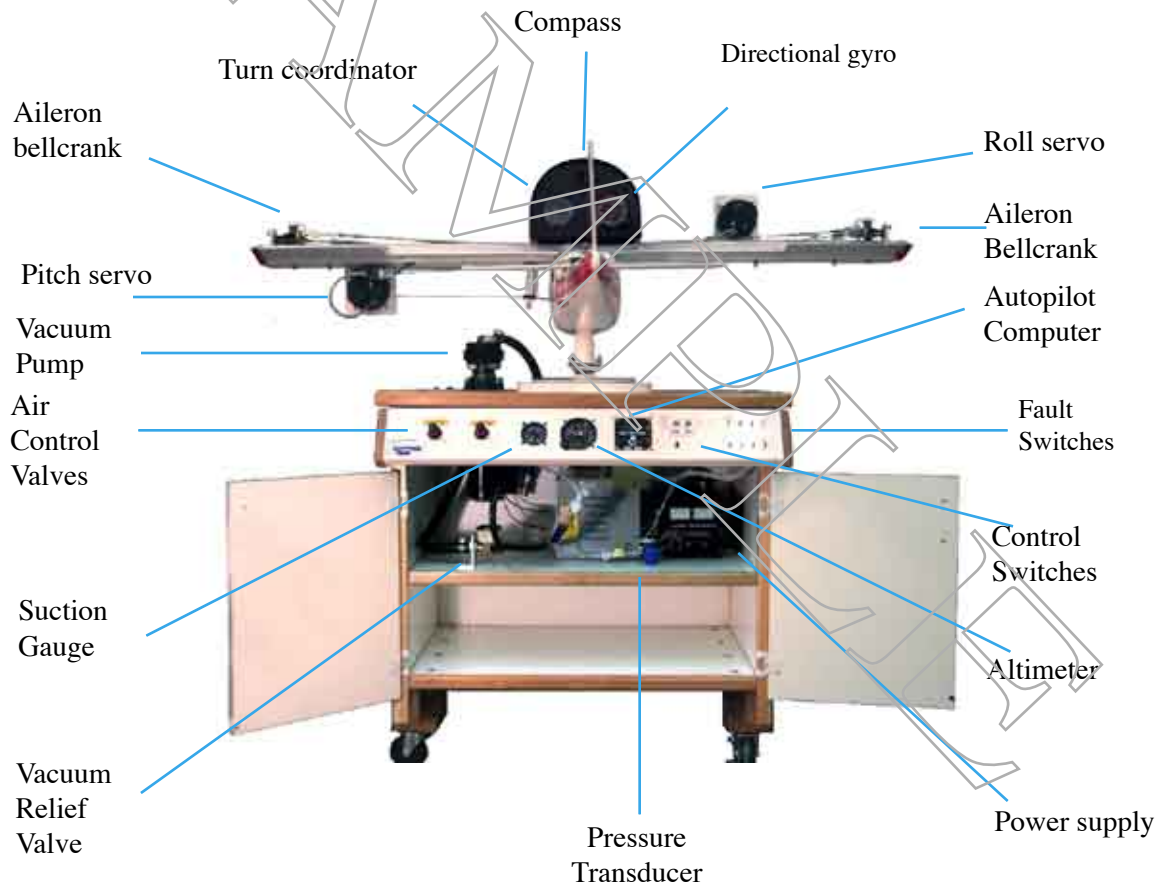


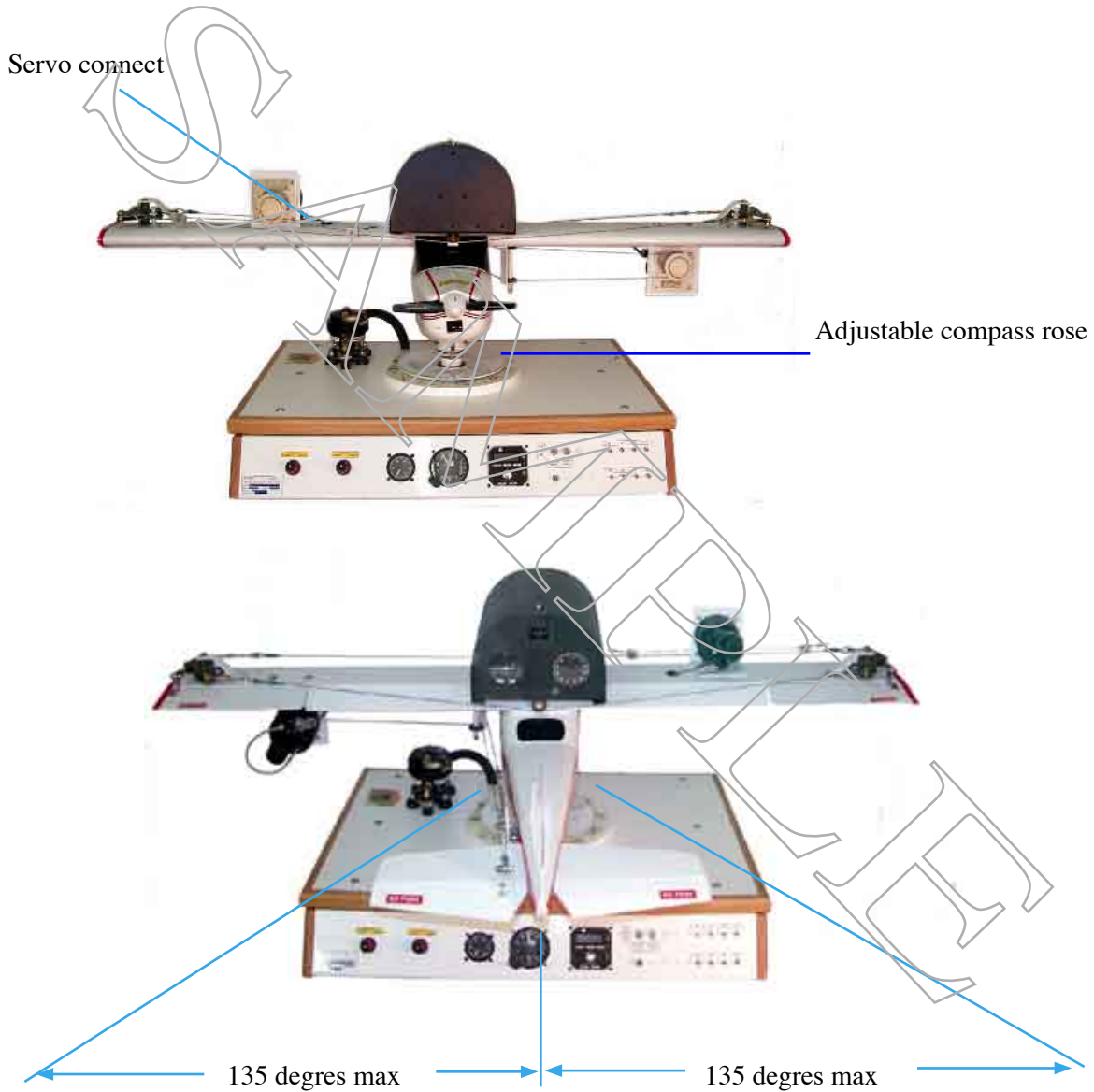
# General Familiarization

Familiarize yourself with the trainer

Autopilots are very reliable and have good durability. Your autopilot trainer is built with the same durability, but as in aircraft will tolerate little abuse. They are reliable yet fragile. Never mistreat your trainer by jarring or bumping. Keep your trainer in a warm dry climate, never store outside. Handle all components with care never grasp any part on the autopilot unless your familiar with the unit.



## General Familiarization



### Caution;

Never move the aircraft on your autopilot trainer past 270 degrees total rotation. The vacuum tubing and wire harness that run the instruments in the instrument panel may be damaged

## General Familiarization

The elevator pulleys are located on the left fuselage side and provide for the direction change of the cables



The autopilot trainer can be pivoted about both axis so the instrumentation can respond the same as it would in flight.

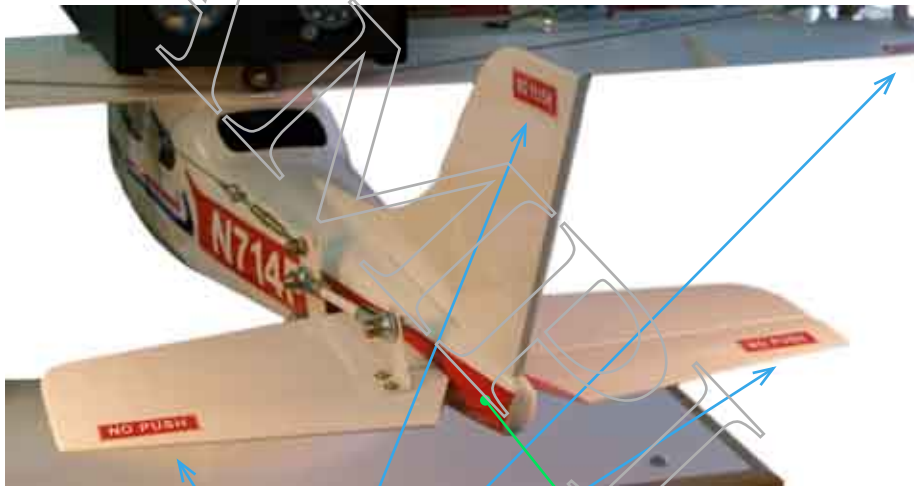


When moving the aircraft, Grasp the aircraft by the tail cone or the red wing tips, NEVER grab by the control surfaces. Always gently move the aircraft.



## General Familiarization

Always handle your autopilot trainer as with any sensitive avionics equipment. Never jar, hit or abruptly move the aircraft. Aircraft make gradual maneuvers in flight and due to the fact that the scale of the autopilot system is full sized and the aircraft is not will mean the autopilot is responding in a scaled down environment so small motions will affect the systems. Never push on the control systems. Always grasp the aircraft at the tail cone, fuselage, or the red wing tips.



Never push or pull

Grasp here

## System Description

The S-Tech System 50 is a two axis autopilot with an altitude hold function. The system consists of a programmer / computer, turn coordinator, roll servo, a pressure transducer, pitch servo, directional Gyro, and the necessary wiring to interconnect these components .



Roll inputs are received from the Turn Coordinator, Directional Gyro, Stabilizer Command Knob (located on the programmer / computer), and the aircraft's Navigation Receiver. These signals are processed by the programmer computer and mixed to drive the Roll Servo in response to computed error signals.

Pitch inputs are received from a Pressure Transducer and an on-board accelerometer. These signals are processed and mixed to drive the Pitch Servo in response to computed error signals.



## System Description

### PROGRAMMER/COMPUTER

The Programmer/Computer assembly, is a single panel mounted unit. This unit contains mode switches, indicator lamps, all the control logic and computer logic and computer circuitry, and roll centering adjustment.

### TURN COORDINATOR

The Turn Coordinator, is panel mounted and electrically driven. It produces an electrical output that represents direction and rate of roll and turn. It has a tachometer circuit that senses the gyro rotor speed and supplies that output to the computer to ensure the gyro rotor is spinning at operational speed before the autopilot can be engaged.

### DIRECTIONAL GYRO

The Directional Gyro is a panel mounted instrument. It is air driven and has an electrical output that represents direction and magnitude of the differences between aircraft heading and the heading bug displacement.

### ROLL SERVO

The Roll Servo assembly is a DC Servo motor and gear reduction assembly with capstan. The capstan is engaged by a solenoid and gear cluster when a lateral mode is selected.

### PRESSURE TRANSDUCER

The Pressure Transducer is used to generate a voltage proportional to the absolute pressure of the aircraft's static source. The output signal from the transducer is a DC Voltage which, at sea level with an atmospheric pressure of 29.92 inches of mercury, is approximately 8.5 volts. As altitude increases, the absolute pressure decreases, and the voltage decreases. The transducer signal is linearized with respect to altitude by the Altitude Linearizer circuit.

### TURN & BANK

The turn-and-bank indicator is a combination instrument, located in the left-hand side of the upper instrument panel. The indicator is an electrically-driven gyro mounted in a horizontal gimbal that is attached to a pointer which indicates the rate of turn. The slip indicator consists of a curved, liquid-filled glass tube in which an inclinometer ball, moving with dampened motion, changes positions according to the gravitational and centrifugal forces acting upon the aircraft.

### MAGNETIC COMPASS

The magnetic compass is mounted in the top center of the upper instrument panel. It consists of a pair of parallel magnetic bars surrounded by a circular calibrated compass card visible through a window in the compass case. The compass case is a metal bowl filled with liquid to dampen dial oscillation. The compass has two adjusting set screws, one for N-S headings and one for E-W headings. These adjusting set screws are located on the lower face of the compass behind the metal cover.



## System Description

### PITCH SERVO

The Pitch Servo, is a DC servo motor and gear reduction assembly with a capstan and Trim Switch Bracket assembly. The capstan is engaged by a solenoid and gear cluster when operating in Altitude Mode. The Trim Switch Bracket detects when the aircraft needs trimming by detecting torque on the pitch servo.

### VACUUM SYSTEM

1. The vacuum system consists of a vacuum pump, a relief valve, an air filter, directional gyro and necessary plumbing. A dry vacuum pump, which requires no lubrication, is located on the left side of the cabinet top and is mounted to an aircraft engine drive pad. The vacuum pump outlet is exhausted into the cabinet and has a muffler attached to quiet operation. The vacuum line plumbing is routed from the pump through the cabinet top to the relief valve. From the relief valve, the lines go to the suction gage, the directional gyro, the instrument air filter and to an instrument static air interface for the altimeter and altitude sense transducer. The suction gage indicates the amount of vacuum present in the system. The vacuum air filter is provided to remove dust particles and vapor from the air entering the instruments.
2. The vacuum instruments consist of the directional gyro and the suction gage.
  - a. The directional gyro is a flight instrument incorporating an air-driven gyro stabilized in the vertical plane. The gyro is rotated at high speed by lowering the pressure in the air-tight case with the vacuum pump and simultaneously allowing air at atmospheric pressure to enter against the gyro buckets. Due to gyroscopic inertia, the spin axis continues to point in the same direction, even though the airplane yaws to the left or right. This relative motion between the gyro and the instrument case is shown on the instrument dial which is similar to a compass card. The dial, when set to agree with the airplanes magnetic compass, provides an azimuth indicator that is free from "swing".
  - b. The suction gage is calibrated in inches of mercury and visually displays the amount of vacuum created by the vacuum pump and limited by the vacuum regulator.
  - c. Directional gyro precession. Acceptable limits for gyro drift is four degrees in either direction from a heading during a ten-minute period. Excessive gyro precession can be caused by low vacuum system pressure.



## System Description

3. Adjustment of the system vacuum is accomplished by turning the adjustment wing nut on the bottom of the vacuum regulator mounted in the cabinet. Turning the nut clockwise, viewed from the bottom will increase vacuum. The system vacuum should be set from 4.5 to 5.0" hg.

Caution: The vacuum regulator adjustment is the only adjustment allowed in the vacuum system.

### ELEVATOR CONTROL SYSTEM

The elevator control system in this autopilot simulator / trainer consists of two elevator assemblies, elevator bellcrank and elevator arm. The elevators are attached to the rear spar of the horizontal stabilizer at four hinge points. The elevator cable assembly and adjustable turnbuckles are attached at the bellcrank and at the pitch servo drum. There is no primary control cable in this system. When the autopilot system is engaged in the "altitude hold" mode, the pitch servo transmits an up or down input to the elevators to maintain the selected altitude.

### AILERON CONTROL SYSTEM

The aileron system on this autopilot simulator/trainer, consists of the wing quadrant assemblies, ailerons and the cable assemblies. The ailerons are attached to the rear spar of each wing. When the autopilot system is engaged in HDG mode, the roll servo transmits an input to the forward aileron cable. This movement rotates each bellcrank, and in turn positions the ailerons in opposite directions to bank the aircraft in the direction necessary to intercept the desired heading. Stop bolts located on the aileron bellcrank assembly prevent over travel of the ailerons.





## System Description

### ALTIMETER AND ALTITUDE ADJUSTMENTS

1. The altimeter static air is supplied by the vacuum pump. The static air lines are connected through an interface to the vacuum system that limits the rate of climb and descent in the static air system. The altimeter and autopilot altitude transducer sensing is controlled by the use of the static air “source” and “vent” control valves. To increase the sensed altitude, open the static source valve, and close the static vent valve. To decrease the sensed altitude, close the static source valve and open the static vent valve. The static source and vent valves have locking rings to prevent inadvertent rotation. To make adjustments, lift the locking rings away from the panel.

Caution: Do not over-tighten the static control needle valves, light torque is all that is necessary to close and seal these valves.

Caution: The static air interface has factory-set metering valves located inside the cabinet. No adjustment of these valves is authorized.

2. Demonstrate the autopilot altitude hold feature. With the vacuum and autopilot systems operating, open the static source valve and close the static vent valve. Allow the Altimeter to increase to an altitude above field elevation. Close the source valve, the Altimeter should stabilize at the selected altitude. Slowly open the static vent valve a small amount. The altimeter will begin to show a descent. At the same time, with altitude hold selected, the autopilot should begin to give a pitch up command to maintain the selected altitude. Close the static vent valve and open the static source valve. The altimeter will show an increase in altitude. Allow the altitude to increase above the previous altitude. The autopilot will then command a pitch down to maintain the previously selected altitude.



## System Description

### INDICATORS & CONTROL FUNCTION

Altitude Hold and elevator out of trim warning. A Pre-Flight Test circuit has been added which checks the G-Force limiter and inhibits the RDY light if the system is determined to be inoperative.

Setting the A.P. Master Switch to "Test" initiates the Pre-Flight Test. (It also illuminates all annunciator lamps.) This test requires approximately ten seconds, and culminates, when the A.P. Master is set to the "On" position, with an illuminated RDY light if the system is operational. Any lateral mode can be engaged at this time. However, during the Pre-Flight sequence, signals are generated in the PFGC card that requires an approximate 15 second stabilizing period before the Altitude Hold mode can be used. For this reason, for approximately 15 seconds after returning the A.P. Master Switch "On" from the "Test" position, ALT mode cannot be engaged.

Momentary actuation of the ALT switch engages Altitude Hold mode and illuminates the ALT annunciator. A second actuation disengages ALT mode and turns off the ALT annunciator.

In ALT Mode, the PEGO card develops altitude position and altitude error signals from the pressure transducer and mixes these with an acceleration signal developed from the accelerometer and derives an appropriate servo drive to satisfy these.

An optional remote ALT Mode switch can be mounted on the aircraft control wheel.

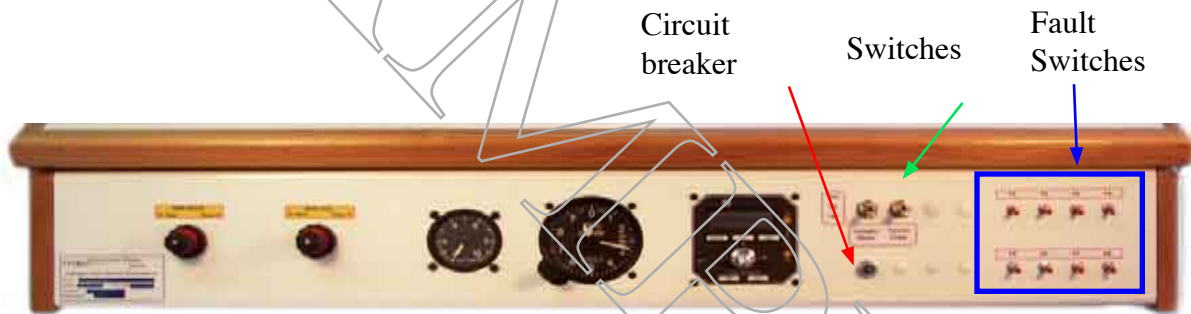
Two microswitches located within the pitch servo to detect Up or Down Servo torque which is used as an aircraft out of trim indicator. A Trim/Lights Logic circuit located on the Pitch Logic card translates this into Up or Down out of trim warning annunciations.

The Pre-Flight Test Interval Timer initiates the preflight test sequence which is a safety feature incorporated into the PFGC. The test sequence automatically checks the accelerometer G-Force limiter circuitry and either allows or disallows use of the system. A successfully completed test illuminates the RDY Lamp. An unsuccessful test prevents illumination of the -RDY Lamp which in turn disallows use of the system.

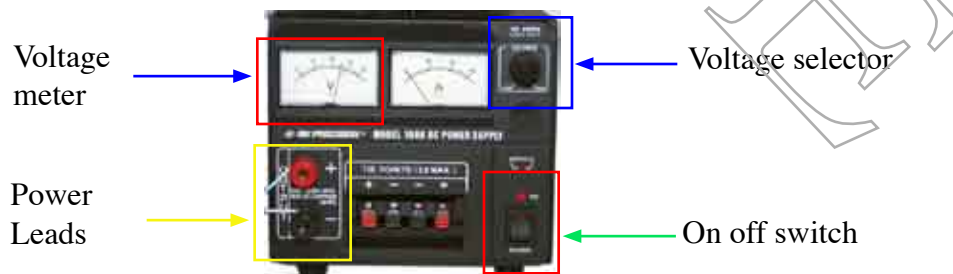
# Autopilot Trainer Operation

## Autopilot Trainer Set up

1. Choose a level location sheltered from any air currents or drafts.
2. Set the cabinet wheel brakes.
3. If compass headings are to be used skip to the section Adjust the Magnetic Compass, and complete the compass rose setup.
4. Check the control surface cable tension as per "Systems ground checks section".
5. Check that the circuit breaker is pushed all the way in.
6. Set all of the control switches to the "off" (down) position, then set all the fault switches to the down position.



7. Open the right side cabinet door and verify the power switch is off (down) on the power supply, The voltage adjustment is all the way to low (counter clockwise), The output leads are tight and correctly installed (red = positive / black = negative),

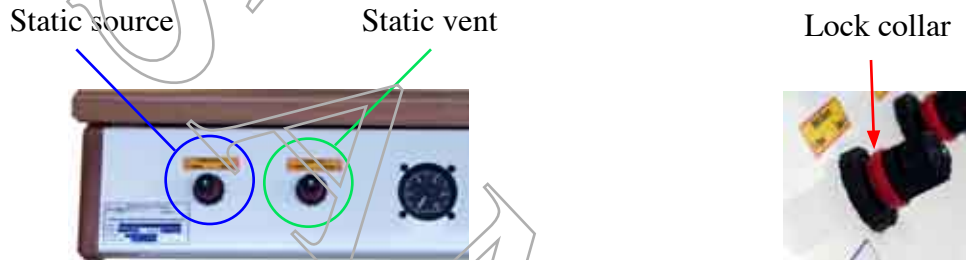


8. Connect the power cord (at the back of the cabinet) to a 115VAC 10 amp grounded circuit.
9. Set the DC power supply switch to the on (up) position and rotate to voltage selector clock wise to increase voltage until 13.8 volts is achieved. The turn coordinator will begin to spin up in the instrument panel.

## Autopilot Trainer Operation

### Caution:

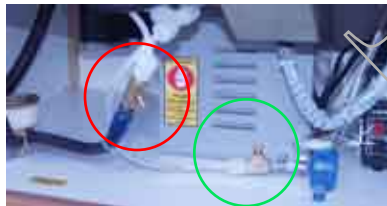
Do not over-tighten the static control needle valves, light torque is all that is necessary to close and seat these valves.



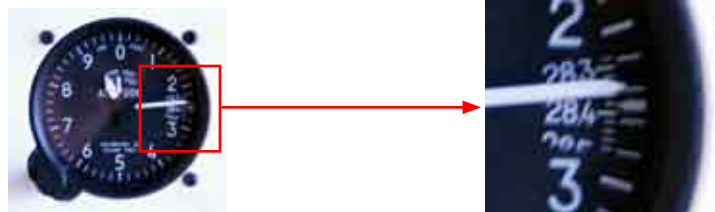
10. Insure both the static vent and source valves are unlocked by pulling the red locking collars away from the panel. Turn the static source valve black knob gently clockwise to close it, rotate the static vent knob counterclockwise one turn to open it.

### Caution:

The static air interface in the cabinet has factory-set metering valves. No adjustment of these valves is authorized. Damage to the autopilot will result!



11. Set the altimeter to the current barometric pressure or field elevation by rotating the knob for the Kollsman window adjustment.



## Autopilot Trainer Operation

12. Set the “pump” switch to the on (up) position. The vacuum pump will begin to run, verify that suction reads 4.5” to 5” hg. If the proper suction is not achieved set the suction relief valve as per the Instructions in the "vacuum system and related instruments section". Allow the instrument air systems 15 seconds to stabilize.



**Note:**

If the altimeter begins to indicate an increase in altitude, insure the static source valve is closed.

13. Altimeter operation and adjustment;

With the vacuum and electrical systems running, open the static source valve and close the static vent valve.

**Caution:**

Do not over-tighten the static control needle valves, light torque is all that is necessary to close and seal these valves.

Allow the altimeter to increase to an altitude above field elevation. Close the vent valve, the altimeter should stabilize at the selected altitude. Slowly open the static vent valve a small amount. The altimeter will begin to show a descent.

**NOTE;**

These altimeter adjustments will be used when the autopilot altitude hold is in operation.

## Autopilot Systems ground checks

1. Verify autopilot trainer aileron cable tension by attaching a calibrated tensiometer to the aileron cable near the aileron and read the tensiometer. Follow proper procedures and instructions for the tensiometer and verify the proper shoes are installed for the cable size. The cable tension for the aileron cable is 12 lbs +1 -3. The cable tension for the elevators cables is 12 +2 - 3. If adjustment is required proceed to step 2.

### Caution

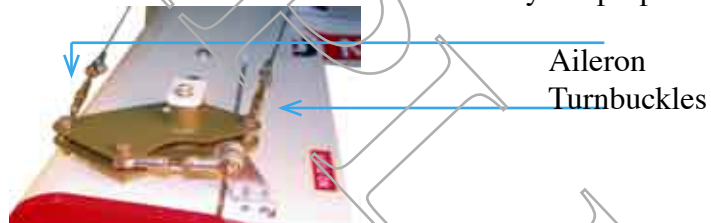
The figure below is NOT a representation of the cable tension.

Fig 1



2. Adjusting the aileron cable tension.  
Adjustments to the cable tension is made by incrementally adjusting the turnbuckles on the aileron bellcrank. See fig. 2. Adjust the cable to the correct specifications, never over tighten the cables. Carefully adjust the cables so as not to alter the rigging of the ailerons and control deflection. Follow proper procedures and instructions for the tensiometer and verify the proper shoes are installed for the cable size

Fig 2



### Rigging Aileron Control System

1. Loosen both the forward (direct) and aft (interconnect) aileron cables. Ensure that the left and right ailerons are “faired in” to the neutral position, this can be checked by matching to the wing tips.
2. Alternately increase the tension on the direct then the interconnect cables until a tension of 12 +2 - 3 lbs. is reached on each cable. Ensure that the ailerons remain in the “faired in” neutral position.
3. Verify that the ailerons reach the bellcrank internal stops.

## Autopilot Systems ground checks

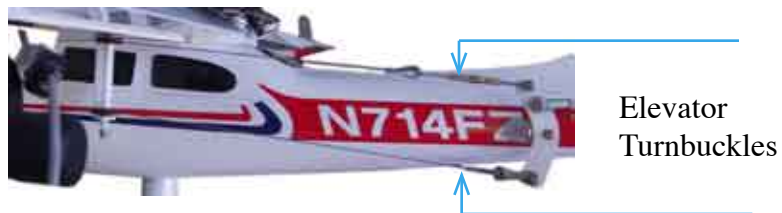
### Rigging Autopilot Aileron Interconnect

1. Rig the aileron control system in accordance with rigging instructions.
2. Center the autopilot interconnect cable on the roll servo drum and wrap two turns in each direction, making sure that as the cable leaves the drum to be clamped to the primary control cable, it is on the bottom (closest to the primary cable).
3. Clamp one end of the autopilot interconnect cable to the primary control cable, then holding tension on the opposite end, clamp it in place. The tension on the autopilot interconnect cable should be 12lbs +/- 2lbs.
4. After rigging the aileron control system, perform an operational check of the autopilot roll

### 4 Adjusting the elevator cable tension.

Adjustments to the cable tension is made by incrementally adjusting the turnbuckles on the elevator bellcrank. See fig. 2. Adjust the cable to the correct specifications, never over tighten the cables. Carefully adjust the cables so as not to alter the rigging of the elevator and control deflection.

1. Loosen both the “up” and “down” elevator control cables. Ensure that the elevators are faired in to the horizontal stabilizer. Maintaining the streamlined position of the elevators, alternately tighten the elevator cable turnbuckles until a tension of 12lbs +/- 2lbs is reached.
2. Verify that the elevator bellcrank reaches its stops.
3. After rigging the elevator control system, perform an operational check of the autopilot pitch control system.

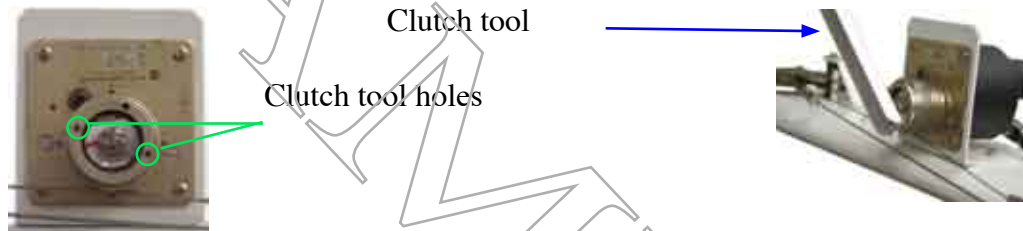


## Autopilot Systems ground checks

1. Remove the covers from both the aileron and elevator servos, and place the servo clutch torque tool on the elevator clutch.



2. Turn power supply "ON" and adjust to 13.8 volts, engage Autopilot Circuit breaker



3. Set Autopilot Master Switch to the "TEST" position: APR, STB, HDG, ALT, NAV, REV, RDY, UP, and DN lamps illuminate and the automatic test sequence is initiated. (See figure 1)

### Test Sequence:

- \* The Pitch Servo Solenoid engages upon "TEST" switch closure, this can be verified by observing the clutch tool resisting your inputs about the Pitch axis;
- \* Solenoid disengages three seconds later and UP Trim Lamp extinguishes (See figure 2) verify solenoid disconnect by observing clutch tool freedom in Pitch axis;
- \* Solenoid re-engages three seconds later and UP Trim Lamp illuminates, again observe the clutch tool resisting your inputs;
- \* Solenoid again disengages three seconds later and DN Trim Lamp extinguishes (See figure 3), again verify solenoid disconnect by observing clutch tool freedom.

**Fig 1**



**Fig 2**



**Fig 3**





# Autopilot Systems ground checks

## SYSTEM GROUND CHECKS

Place the clutch tool on the roll servo for the next check.

4. Set Autopilot Master Switch to the "ON" position. When the Turn Coordinator rotor speed reaches an operational RPM, the RDY Lamp will illuminate.

5. Depress the ON/OFF Switch.

ON / OFF  
switch



The STB Lamp illuminates and the Roll Servo Solenoid engages, verify Roll Servo Solenoid engagement by observing clutch tool rigidity. Remove the clutch tool and Rotate STB Command Knob on the Computer/Programmer left and right and observe left and right Control Wheel movement. Note that the Control direction corresponds to the direction of knob rotation.



STB  
Command  
Knob

6. Depress the STB Command Knob. HDG Lamp illuminates. Rotate the HDG Bug on the Directional Gyro left and right of the center indice. Note that the Control direction of movement corresponds to HDG Bug direction. Center the HDG Bug before proceeding.

Indice



Heading  
Bug

Directional Gyro

## Autopilot Systems ground checks

8. Press the ALT Switch. The ALT Lamp illuminates and the Pitch Servo Solenoid engages. Verify pitch Servo Solenoid engagement by observing clutch tool rigidity. Rotate the clutch tool with a steady pressure forcing the elevators to the down position and check that the DN Trim Lamp illuminates after approximately three seconds. Rotate the clutch tool with a steady pressure so the elevators move to the up position and check that the UP Trim Lamp illuminates after approximately three seconds.
9. Check the ready light operation;

If the unit is in use, follow the shutdown procedure and allow the gyro to completely spin down. The ready light can be checked only if the checks are completed in a timely manner as the test sequence must be complete before the gyro spins up to operational speed.

\* Turn on the power supply and quickly adjust the power supply to 13.8 volts.

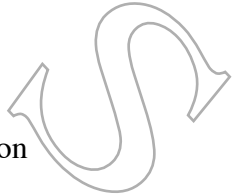
\* Put the autopilot master in the test position and watch for the auto pilot to complete the test sequence of the servos.

\* As soon as the test sequence is finished place the autopilot master switch into the "ON" position, and watch for the autopilot ready green light (see figure one) that is not illuminated, illuminate when the gyro reaches operation RPM.

Fig 1



# Autopilot Systems ground checks



## Altimeter and Altitude Adjustments

### Description

1. The altimeter static air is supplied by the vacuum pump. The static air lines are connected through an interface that limits the rate of climb and descent in the static air system. The altimeter and autopilot altitude transducer sensing is controlled by the use of the static air “source” and “vent” control valves. To increase the sensed altitude, open the static source valve, and close the static vent valve. The static source and vent valves have locking rings to prevent inadvertent rotation. To make adjustments, lift the locking rings away from the panel.

Caution: Do not over-tighten the static control needle valves, light torque is all that is necessary to close and seal these valves.

Caution: The static air interface has factory-set metering valves. No adjustment of these valves is authorized.

2. Demonstrate the autopilot altitude hold feature. With the vacuum and electrical systems running, open the static source valve and close the static vent valve. Allow the altimeter to increase to an altitude above field elevation. Close the source valve, the altimeter should stabilize at the selected altitude. Slowly open the static vent valve a small amount. The altimeter will begin to show a descent. At the same time, with altitude hold selected, the autopilot should begin to give a pitch up command to maintain the selected altitude. Close the static vent valve and open the static source valve. The altimeter will show an increase in altitude. Allow the altitude to increase beyond the previous altitude. The autopilot will then command a pitch down to maintain the previously selected altitude.

## Adjust the Magnetic Compass

### Adjust Magnetic Compass

**NOTE:**

High readings are positive errors, low readings are negative errors.

1. Compass Alignment.
  - a. Ensure compensator adjustments are set to a neutral position. The compensators are located on the lower face of the compass behind the cover plate.



Compensator adjustments

- b. Using a hand-held magnetic compass, check all ferrous material parts for magnetism near the magnetic compass.
    - c. Degauss any parts within two feet which cause greater than 10 degrees deflection of the magnetic compass, and any part within four feet which causes greater than 90 degrees deflection of the magnetic compass.
    - d. Set the cabinet top compass rose N to magnetic north.

Rotate the  
outer ring



Cabinet top compass rose



## S-TEC 50 series Autopilot INFORMATION & OPERATIONS MANUAL

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- e. Position the aircraft to the 270 degrees heading of the compass rose.  
Note; the table must be positioned so over rotation of the airplane does not occur.
- f. With the vacuum pump running and all electrical systems on, record the compass error.
- g. Position the aircraft on the 360 degree heading of the compass rose and repeat step (f).
- h. Position the aircraft on the 90 degree heading of the compass rose and repeat step (f).
- i. Position the aircraft on the 180 degree heading of the compass rose and repeat step (f).
- j. Algebraically sum the north and south errors, divide this sum by two and change the sign of the result. The resulting number is the amount and direction of the north / south compensator adjustment.
- k. Repeat step (j) for east / west compensator adjustment using east / west errors.

### 2. Compensation Adjustments

- a. The errors obtained in the Compass Alignment procedure will be used to determine the required amount and degree of compensation for the compass.

### 3. Compass Compensation

- a. At one cardinal heading, adjust the appropriate compensator the amount calculated in Compass Alignment procedure step 1.
- b. Rotate the aircraft 90 degrees and adjust the appropriate compensator the amount calculated.
- c. Rotate the aircraft to the next two cardinal headings and ensure that no error greater than 5 degrees is present.
- d. With normal aircraft power on, rotate the aircraft to 30 degree headings (including cardinals). Stop on each heading long enough to allow compass to stabilize.
- e. Record the headings indicated by the compass at the 30 degree positions. No error greater than +/- 5 degrees shall be indicated by the compass.



# Autopilot Faults

## System Troubleshooting

### Description

This autopilot trainer has been designed with seven selectable faults. System malfunctions can be introduced by actuating the desired fault switch (FS1 through FS8). The faults are designed to demonstrate typical operational problems. The test points available are in the autopilot wire harness. All tests can be done with a standard volt/ohmmeter.

Note: All faults are switched off in the down (normal) position.

1. FS1 UP: Transducer signal. Sense voltage from the altitude pressure transducer to the autopilot computer. This open in the wire, combined with “FS2 on”, will cause the autopilot to command a pitch down while in the “altitude hold” mode.
2. FS2 UP: Transducer signal. Sense voltage from altitude pressure transducer to autopilot computer. With “FS2 and FS1 on”, the “altitude hold” feature will command a descent. Variable voltage determined by static air pressure. Check wire from pin 19 at computer to pin 1 of transducer.
3. FS3 UP: Heading Signal Reference. Reference voltage from computer to directional gyro. With “FS3 on”, in “HDG” mode, the system will begin a right turn to a heading that it can't capture (no reference to compare to). 5VDC reference voltage. Check wire from pin 25 at computer to pin E at directional gyro.

Note: Immediately after engaging FS3, rotate the airplane smoothly but quickly to the right, the system will sense that it is gaining on the desired heading, which will be indicated by the reduced aileron deflection, but when the rotation is stopped, a right turn is again commanded.

4. FS4 UP: Airframe ground. Ground connection to roll servo solenoid. With “FS2 on”, the roll servo will not engage (the motor runs but no roll input). 0VDC, continuity to ground. Check wire from pin 2 of roll servo to airframe ground.
5. FS5 UP: Pitch solenoid disabled. Power to activate the pitch solenoid. With “FS5 on”, the pitch servo will not engage. Solenoid enabled, 14 VDC, solenoid disabled, 0 VDC. Check wire from pin 1 of pitch servo to computer.



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INFORMATION & OPERATIONS MANUAL

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## System Troubleshooting

### Description

6. FS6 UP: Pitch Up trim. Switched trim power to indicate direction of required trim. With “FS6 on”, up pressure on the controls will not give a “up” light. Out of trim, 0VDC, otherwise, approximately 2VDC. Check wire from pin 6 of pitch servo to computer.

Note: Pressure on the controls must be maintained for three seconds before the “up” trim indicator will illuminate.

7. FS7 UP: Pitch Down trim. Switched trim power to indicate direction of required trim. With “FS6 on”, down pressure on the controls will not give a “dn” light. Out of trim, 0VDC, otherwise, approximately 2VDC. Check wire from pin 8 of pitch servo to computer.

Note: Pressure on the controls must be maintained for three seconds before the “dn” trim indicator will illuminate.

8. FS8 UP: Rate Gyro Signal. Signal to compare to rate gyro reference. With “FS8 on”, system will command a hard turn to the right. Output at standard rate turn 1VDC. Check from pin C of gyro connector to computer.

Note:

Unlike fault #3, turning the aircraft will not cause the aileron deflection to decrease.